Remarks/Arguments

Reconsideration of this application is requested.

Telephone Interview Summary

A telephone interview was conducted on December 16, 2008 between applicant's agent Robert Wu and the Examiner. Applicant thanks the Examiner for the courtesies extended during that interview. During the interview, amendments to the claims along the lines set forth herein were discussed and the Examiner indicated that such amendments would overcome the current rejections. The points made during that telephone interview are further summarized herein.

Claim Status

Claims 1-6 are pending. Claims 1 and 4-6 are amended.

Claim Objections

Claims 5 and 6 are objected to as informal. In response, claims 5 and 6 are amended to correct the noted antecedent basis issues and are further amended for consistency with amended claim 4.

Claim Rejections – 35 USC 102/103

Claims 1, 2, 4 and 6 are rejected under 35 USC 102(b) as anticipated by Wada (US 5,220,185). Claims 1, 3 and 4 are rejected as anticipated by Morimoto (US 6,426,238). Claim 5 is rejected under 35 USC 103(a) as obvious over Morimoto in view of Cazaux (US 5,283,451). In response, applicant traverses the rejections and amends independent claims 1 and 4 to clearly distinguish over all references of record.

The solid image capturing element according to the present invention has a structure in which a semiconductor region of one conductivity type 4 is formed closest to a shift register-side surface of a semiconductor substrate of a first conductivity type 6 and a semiconductor region of a second conductivity type 8 is formed in a portion farther from the shift register-side surface than the semiconductor region of the first conductive type. A first semiconductor region 10 and a second semiconductor region 60 having a higher dopant concentration than

that of first semiconductor region 10 are formed in the semiconductor region of second conductive type 8. Further, a horizontal shift register is formed above first semiconductor region 10, while an output section is formed above second semiconductor region 60.

Independent claims 1 and 4, directed to respective apparatus and method claims, are amended to clarify these features. For example, claim 1 is amended as follows:

> *...a semiconductor region of a first conductive type is formed closest to a shift register-side surface of a semiconductor substrate of the first conductive type, while a semiconductor region of a second conductive type which is different from the first conductive type is formed in a portion farther from the shift register-side surface than the semiconductor region of the first conductive type, and a first semiconductor region and a second semiconductor region having a higher dopant concentration than that of the first semiconductor region are formed in the semiconductor region of the second conductive type...*

Claim 4 is amended in a similar manner. Wada and Morimoto do not disclose the claimed structure of a first and second semiconductor region having different dopant concentrations formed in the second conductive type. In particular, Wada only discloses n+ region 20 and n subregion 22 in the n region of a first conductive type that is closest to a shift register-side surface of substrate 11. The p-well region of a second conductive type that is farther from the shift register-side surface than the first conductive type fails to teach applicant's first and second semiconductor regions. Similar arguments apply for the independent method of claim 4.

Likewise, in Fig. 3G of Morimoto, a first conductive type formed closest to the shift register-side corresponds to n-type layer 121 (see also Fig. 3A). P-type substrate 120 corresponds to the second conductive type. However, claims 1 and 4 require a first and second semiconductor region having different dopant concentrations to be formed in the second conductive type (p-type substrate) farther from the shift register-side surface. However, Fig. 3G merely illustrates an n+

region 127 and n-type region 12 in the n-type well 121. A first and second semiconductor region of the p-type susbtrate 120 having different dopant concentrations is clearly not disclosed. Cazaux is cited for teaching an n- layer 20 in an n-type layer 12 closest to a shift register-side surface, and therefore does not remedy the deficiencies of Wada and Morimoto.

By contrast, as recited in claims 1 and 4, the first conductive type is formed closest to a shift register side surface of a semiconductor substrate of the first conductive type such that first and second semiconductor region of different dopant concentrations is formed in the region of a second conductive type different from the first conductive type.

Since Wada, Morimot and Cazaux fail to disclose or suggest each and every feature of claims 1 and 4, they cannot anticipate claims 1-4 and 6 or render obvious claim 5. For these reasons, the rejections of claims 1-6 under 35 USC 102 and 35 USC 103 should be withdrawn.

Conclusion

This application is now believed to be in condition for allowance. The Examiner is invited to contact the undersigned to resolve any issues that remain after consideration and entry of this amendment. Any fees due with this response may be charged to our Deposit Account No. 50-1314.

Respectfully submitted,
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